

IN THE CLAIMS

This listing of claims replaces all prior listings.

1. (currently amended) An acoustic signal processing apparatus for detecting a featuring portion in acoustic signals, comprising:

amplitude calculating means for calculating short-term amplitudes, at an interval of a preset time length in the acoustic signals;

candidate domain extraction means for extracting candidate domains of said featuring portion based on said short-term amplitudes;

feature extraction means for extracting sound quality featuring quantities, quantifying the sound quality, at an interval of said preset time length in the acoustic signals; and

candidate domain evaluating means for evaluating, based on said short-term amplitudes and said sound quality featuring quantities, whether or not said candidate domain is said featuring portion,

wherein said sound quality featuring quantities are selected from the group consisting of the short-term power spectrum coefficients of said acoustic signals, short-term cepstrum coefficients of said acoustic signals, and coefficients obtained on Karhunen-Loeve transforming said short-term power spectrum coefficients.

2. (original) The acoustic signal processing apparatus according to claim 1 wherein said acoustic signals are acoustic signals generated in an event.

3. (original) The acoustic signal processing apparatus according to claim 1 further comprising:

index generating means fore generating the index information including at least a start position and an end position of said featuring portion.

4. (canceled).

5. (original) The acoustic signal processing apparatus according to claim 1 wherein said feature extraction means extracts a domain as a candidate domain, in case the short-term amplitudes of said domain exceed a first threshold value, and said domain exceeds a second threshold value and persists.

6. (original) The acoustic signal processing apparatus according to claim 1 wherein said candidate domain evaluating means evaluates whether or not said candidate domain is said featuring portion, using at least one of a domain length of said candidate domain, a maximum value or an average value of said short-term amplitudes in said candidate domain, a length by which said sound quality featuring quantities exceed a preset threshold value in said candidate domain or a ratio of said length to the length of said candidate domain, and a maximum value or an average value of said sound quality featuring quantities in said candidate domain.

7. (original) The acoustic signal processing apparatus according to claim 1 further comprising:

insertion detection means for detecting an insertion signal in said acoustic signals;

said candidate domain evaluating means evaluating whether or not said candidate domain is said featuring portion, based on an insertion domain as detected by said insertion detection means.

8. (original) The acoustic signal processing apparatus according to claim 7 wherein when a plurality of small sound volume domains, each having said short-term amplitudes less than a preset threshold, have occurred per a preset time, said insertion detection means detects a domain, sandwiched between neighboring ones of said small sound volume domains, as being said insertion domain.

9. (original) The acoustic signal processing apparatus according to claim 7 wherein said acoustic signals include a commercial message and wherein said insertion detection means detects said commercial message as said insertion signal.

10. (currently amended) An acoustic signal processing method for detecting a featuring portion in acoustic signals, comprising:

an amplitude calculating step of calculating short-term amplitudes, at an interval of a preset time length in the acoustic signals;

a candidate domain extraction step of extracting candidate domains of said featuring portion based on said short-term amplitudes;

a feature extraction step of extracting sound quality featuring quantities, quantifying the

sound quality, at an interval of said preset time length in the acoustic signals; and

a candidate domain evaluating step of evaluating, based on said short-term amplitudes and said sound quality featuring quantities, whether or not said candidate domain is said featuring portion,

wherein said sound quality featuring quantities are selected from the group consisting of the short-term power spectrum coefficients of said acoustic signals, short-term cepstrum coefficients of said acoustic signals, and coefficients obtained on Karhunen-Loeve transforming said short-term power spectrum coefficients.

11. (original) The acoustic signal processing method according to claim 10 wherein said acoustic signals are acoustic signals generated in an event.

12. (original) The acoustic signal processing method according to claim 10 further comprising:

an index generating step of generating the index information including at least a start position and an end position of said featuring portion.

13. (currently amended) A program for having a computer execute the processing of detecting a featuring portion in acoustic signals, said program comprising:

an amplitude calculating step of calculating short-term amplitudes, at an interval of a preset time length in the acoustic signals;

a candidate domain extraction step of extracting candidate domains of said featuring portion based on said short-term amplitudes;

a feature extraction step of extracting sound quality featuring quantities, quantifying the sound quality, at an interval of said preset time length in the acoustic signals; and

a candidate domain evaluating step of evaluating, based on said short-term amplitudes and said sound quality featuring quantities, whether or not said candidate domain is said featuring portion,

wherein said sound quality featuring quantities are selected from the group consisting of the short-term power spectrum coefficients of said acoustic signals, short-term cepstrum coefficients of said acoustic signals, and coefficients obtained on Karhunen-Loeve transforming said short-term power spectrum coefficients.

14. (original) The program according to claim 13 wherein said acoustic signals are acoustic signals generated in an event.

15. (original) The program according to claim 13 further comprising:
an index generating step of generating the index information including at least a start position and an end position of said featuring portion.

16. (currently amended) A signal recording apparatus comprising:
amplitude calculating means for calculating short-term amplitudes, at an interval of a preset time length in acoustic signals;

candidate domain extraction means for extracting candidate domains of crucial portions of said acoustic signals based on said short-term amplitudes;

feature extraction means for extracting sound quality featuring quantities, quantifying the sound quality, at an interval of said preset time length in the acoustic signals;

candidate domain evaluating means for calculating the crucialness of ~~said~~ said candidate domain based on said short-term amplitudes and said sound quality featuring quantities, and for evaluating, based on said short-term amplitudes and said sound quality featuring quantities, whether or not said candidate domain is said featuring portion;

index generating means for generating the index information including at least a start position and an end position of the candidate domain and the degree of crucialness of the candidate domain evaluated as being said crucial portion by said candidate domain evaluating means; and

recording means for recording said index information along with said acoustic signals, wherein said sound quality featuring quantities are selected from the group consisting of the short-term power spectrum coefficients of said acoustic signals, short-term cepstrum coefficients of said acoustic signals, and coefficients obtained on Karhunen-Loeve transforming said short-term power spectrum coefficients.

17. (original) The signal recording apparatus according to claim 16 wherein said acoustic signals are acoustic signals generated in an event.

18. (canceled).

19. (original) The signal recording apparatus according to claim 16 wherein said feature extraction means extracts a domain as a candidate domain, in case the short-term amplitudes of said domain exceed a first threshold value, and said domain exceeds a second threshold value and persists.

20. (original) The signal record apparatus according to claim 16 wherein said candidate domain evaluating means evaluates whether or not said candidate domain is said featuring portion, using at least one of a domain length of said candidate domain, a maximum value or an average value of said short-term amplitudes in said candidate domain, a length by which said sound quality featuring quantities exceeds a preset threshold value in said candidate domain or a ratio of said length to the length of said candidate domain, and a maximum value or an average value of said sound quality featuring quantities in said candidate domain.

21. (original) The signal record apparatus according to claim 16 further comprising:
discriminating means for discriminating whether or not said acoustic signals are of a valid genre.

22. (original) The signal record apparatus according to claim 21 wherein said discriminating means decides that the acoustic signals are of a valid genre when the number of the candidate domains and the degree of crucialness of the candidate domains are not less than preset thresholds.

23. (currently amended) A signal recording method comprising:
an amplitude calculating step of calculating short-term amplitudes, at an interval of a preset time length in acoustic signals;
a candidate domain extraction step of extracting candidate domains of crucial portion of said acoustic signals, based on said short-term amplitudes;
a feature extraction step of extracting sound quality featuring quantities, quantifying the sound quality, at an interval of said preset time length in the acoustic signals;
a candidate domain evaluating step of calculating the crucialness of ~~said~~ said candidate domain based on said short-term amplitudes and said sound quality featuring quantities, and for evaluating, based on said short-term amplitudes and said sound quality featuring quantities, whether or not said candidate domain is said featuring portion;

an index generating step of generating the index information including at least a start position and an end position of the candidate domain and the degree of crucialness of the candidate domain evaluated as being said crucial portion by said candidate domain evaluating means; and

a recording step of recording said index information along with said acoustic signals,
wherein said sound quality featuring quantities are selected from the group consisting of the short-term power spectrum coefficients of said acoustic signals, short-term cepstrum coefficients of said acoustic signals, and coefficients obtained on Karhunen-Loeve transforming said short-term power spectrum coefficients.

24. (original) The signal recording method according to claim 23 wherein said acoustic signals are acoustic signals generated in an event.

25. (currently amended) A program for having a computer execute a preset processing, said program comprising:

an amplitude calculating step of calculating short-term amplitudes, at an interval of a preset time length in acoustic signals;

a candidate domain extraction step of extracting candidate domains of a crucial portion of said acoustic signals based on said short-term amplitudes;

a feature extraction step of extracting sound quality featuring quantities, quantifying the sound quality, at an interval of said preset time length in the acoustic signals;

a candidate domain evaluating step of evaluating, based on said short-term amplitudes and said sound quality featuring quantities, whether or not said candidate domain is said featuring portion;

an index generating step of generating the index information including at least a start position and an end position of the candidate domain and the degree of crucialness of the candidate domain evaluated as being said crucial portion by said candidate domain evaluating means; and

a recording step of recording said index information along with said acoustic signals,
wherein said sound quality featuring quantities are selected from the group consisting of the short-term power spectrum coefficients of said acoustic signals, short-term cepstrum coefficients of said acoustic signals, and coefficients obtained on Karhunen-Loeve transforming said short-term power spectrum coefficients.

26. (original) The program according to claim 25 wherein said acoustic signals are acoustic signals generated in an event.